IRRIGATION CONTROLLER
8 ZONE TYPE : “CHRONO”

USER MANUAL
CHRONO

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INSTRUCTION MANUAL

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1. GENERAL DESCRIPTION

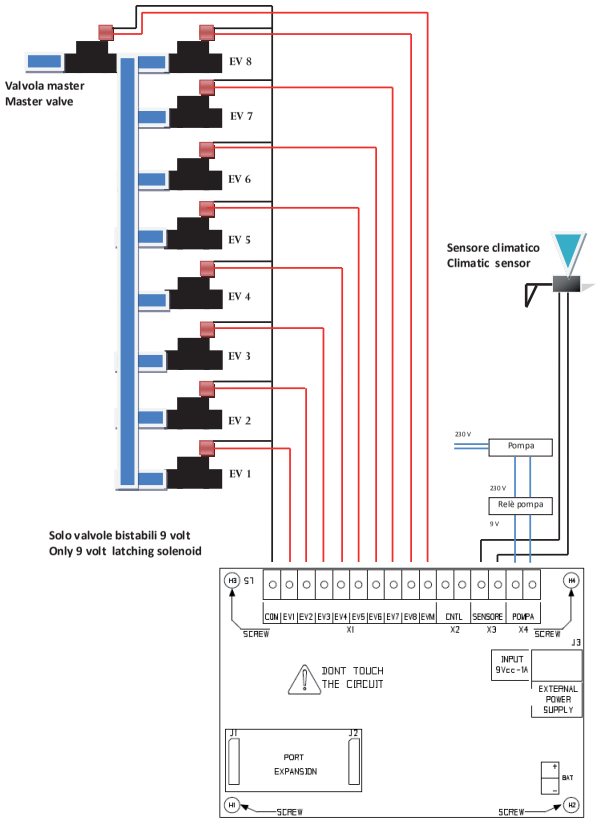
1.1 - CONTROLLER SPECIFICATIONS

The controller Chrono is able to switch the irrigation cycles for a maximum of 8 stations on a weekly-basis. Watering times range from 1 min to 8 hours with up to 16 events per day. Manual override is also possible.

1.2 - SYSTEM CHARACTERISTICS

- Power supply: 9V alkaline battery
- Battery Life: 1 year
- Operation: 9V latching solenoid
- Programs: up to 4 for each area
- Solenoid valve manual override
- Installation: wall mounted
- Inputs: for rain, humidity, wind, & temperature sensors
- Memory: non-volatile. Removal of the battery from the unit will not erase the programs
- Output: Optional with a pump control latching relay or master valve
- Safety features: battery charge control and irrigation prevention when battery is low.

SOLENOID VALVE CONNECTION TO THE CONTROL UNIT



2. USER INTERFACE

2.1 - USER INTERFACE DESCRIPTION

The CHRONO user interface consists of an LCD display and 4 function keys that allow both the creation and modification of irrigation programs (4 programs for eight zones) and the management of manual overrides.
The display turns off automatically if no keys are pressed for more than two minutes. To reactivate the display press one of the four function keys. The LCD display will then display the status page. (display 5 - paragraph 2.1.5).

2.1.1 - SCREEN AT POWER ON (display 1)

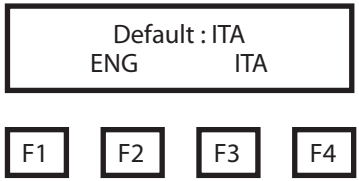
When switched on (battery insertion) the following page will be shown.

CHRONO 8 ZONE WWW.RPESRL.IT

After 5 seconds the controller switches to basic settings:

- selection of default language (paragraph 2.1.2)
- setting day of the week (paragraph2.1.3)
- setting the Clock (section 2.1.4)

2.1.2 - SELECTING THE DEFAULT LANGUAGE (display 2)

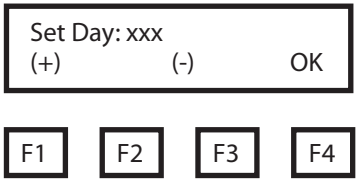


Row 1: Current default language.

Row 2: Options available

Function key definition:
F1 - Select English language.
F2 - ---
F3 - Select Italian language.
F4 - ---.

2.1.3 - SETTING THE DAY OF THE WEEK (display 3)

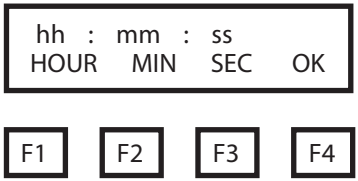


Row 1: Day of the week.

Function key definition:

F1 - No function.
F2 [+] - Day selection (xxx = Mon, Tue, Wed, Thu, Fry, Sat, Sun).
F3 [-] - Day selection (xxx = Mon, Tue, Wed, Thu, Fry, Sat, Sun).
F4 [OK] - Confirm and advance to clock preset page.

2.1.4 - SETTING THE CLOCK (display 4)



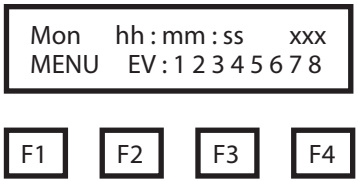
Row 1: Hour, min, sec.

Function key definition:

F1 [HOUR]- Hour setting.
F2 [MIN] - Minutes setting.
F3 [SEC] - Seconds setting.
F4 [OK] - Confirm setting and advance to main menu.

2.1.5 - STATUS PAGE [RUN] (display 5)

Status page is displayed when unit is reactivated from standby, or selecting [RUN].

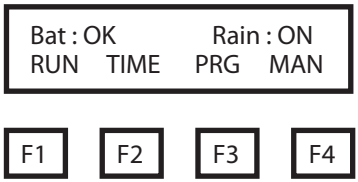


Row 1: Day of week, time and method of irrigation (xxx)

Irrigation methods are indicated as follows:
MAN = Manual irrigation.
P.A = Irrigation program "A" running.
P.B = Irrigation program "B" running.
P.C = Irrigation program "C" running.
P.D = Irrigation program "D" running.
Row 2: Operating status of the irrigation areas [EV].

The number of open area flashes (active irrigation)
Function key definition:
F1 - Advance to MENU programming.
F2 - No function.
F3 - No function.
F4 - No function.

2.1.6 - MAIN MENU PROGRAMMING (display 6)



Row 1: Battery charge [Bat] and rain sensor status [Rain]

Bat	: OK	- Battery charged (steady light)
	: KO	- Low battery (flashing)
Rain	: ON	- Dry terrain (sensor closed)
	: OFF	- Wet terrain (sensor open)

Row 2: Function key definition:

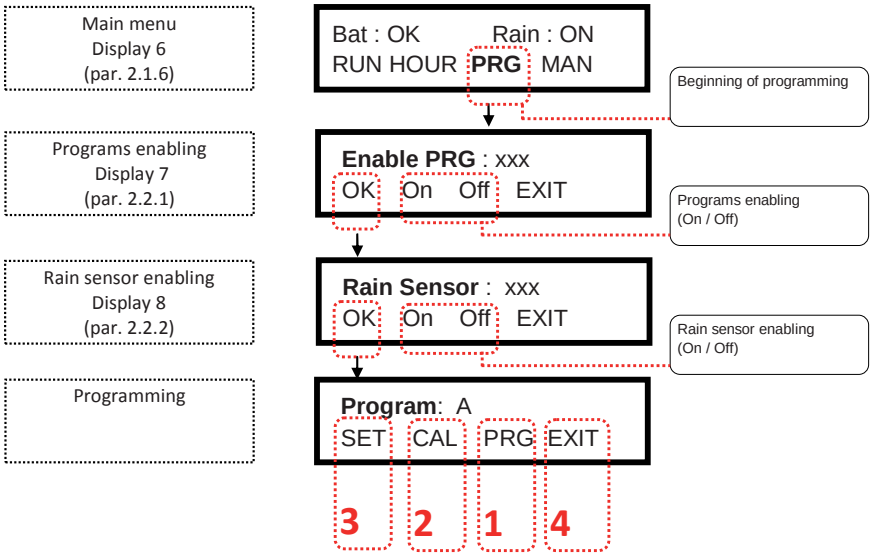
F1 [RUN] - Return to status page	(paragraph 2.1.4) .
F2 [TIME] - Setting the clock	(paragraph 2.1.2).
F3 [PRG] - Create irrigation schemes	(paragraph 2.2.0).
F4 [MAN] – Manual function	(paragraph 2.3.0).

2.2 - CREATION / MODIFICATION OF IRRIGATION PROGRAMS [PRG]

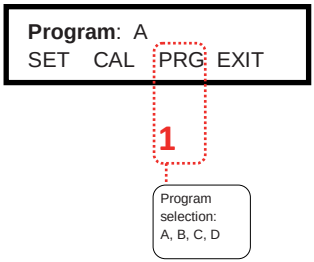
Press F3 [PRG] from the main menu to create or modify irrigation programs.
Procedure for creating programs include the following steps:

2.2.1 Enabling programs set or to be set (on-off)
2.2.2 Enabling rain sensor (on-off)
2.2.3 Selection letter / program name (a-b-c-d)
2.2.4 Frequency setting, or day of week of irrigation
2.2.5 Selection of start number (1-2-3-4)
2.2.6 Time setting for each start
2.2.7 Zone selection (from 1 to 8 zones) to be irrigated
2.2.8 Setting the time of irrigation for each zone
2.2.9 Program save

STANDARD PROGRAMMING

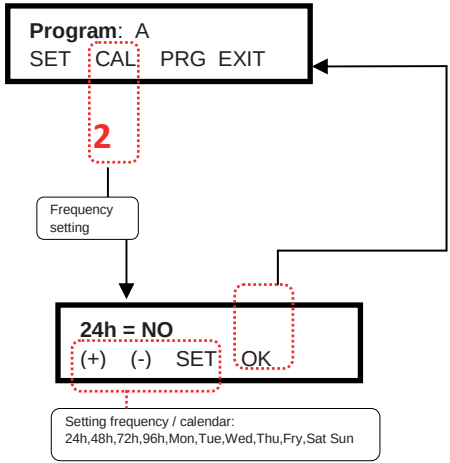


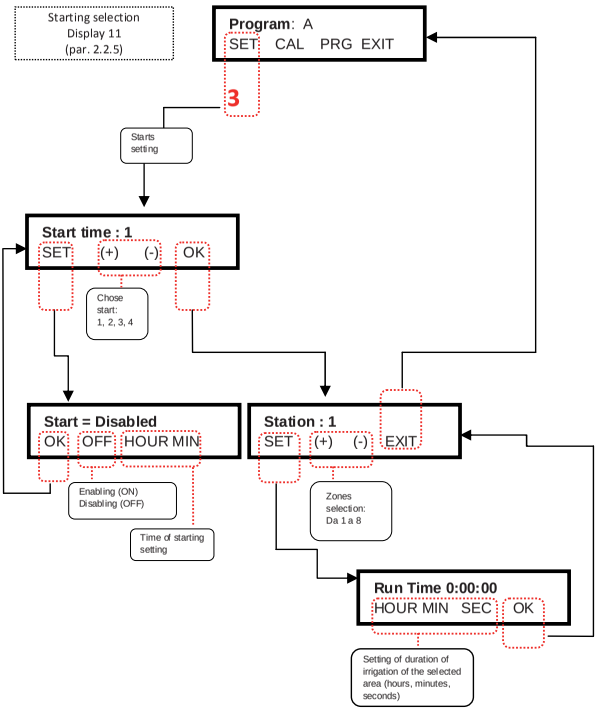
Program selection
Display 9
(par. 2.2.3)



2

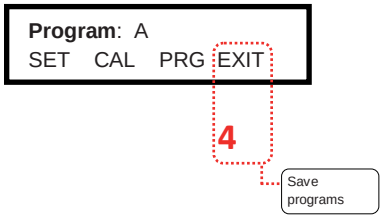
Calendar setting
Display 10
(par. 2.2.4)



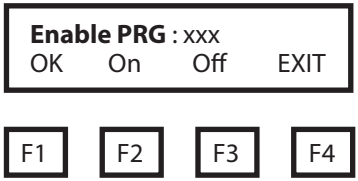

Starting selection
Display 11
(par. 2.2.5)
Program: A
SET CAL PRG EXIT
3
Starts setting
Start time : 1
SET (+) (-) OK
Chose start: 1, 2, 3, 4
Start = Disabled
OK OFF HOUR MIN
Enabling (ON) Disabling (OFF)
Time of starting setting
Station : 1
SET (+) (-) EXIT
Zones selection: Da 1 a 8
Run Time 0:00:00
HOUR MIN SEC OK
Setting of duration of irrigation of the selected area (hours, minutes, seconds)

4

Program save
Display 15
(par. 2.2.9)



2.2.1 - ENABLING OR DISABLING THE PROGRAMS (display 7)



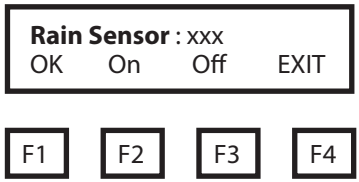
Row 1: Enabling program state
xxx: ON (enabled); OFF (disabled)

Row 2: Function key definition:

F1 [OK] – Confirms selection and moves to "managing the rain sensor".
F2 [On] – Enables programs (programs ON).
F3 [Off] – Disables controller and programs (programs OFF).
F4 [EXIT] – Return to main menu (display 6)

If the programs are disabled when an irrigation cycle is running, the valves are immediately closed and system does not run any other pre-set irrigation programs.
F1 [OK] confirms selection and advances display to the rain sensor setting.

2.2.2 - ENABLING OR DISABLING THE RAIN SENSOR (display 8)



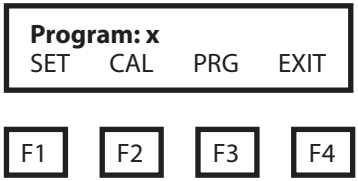
Row 1: Enabling rain sensor state
xxx: ON (enabled); OFF (disabled)

Row 2: Function key definition:

F1 [OK] – Confirms selection and moves to "program selection".
F2 [On] – Enables rain sensor.
F3 [Off] – Disables rain sensor.
F4 [EXIT] – Return to main menu (display 6) .

F1 [OK] confirms the selection and advances to program number setting.

2.2.3 - SELECTION OF PROGRAM NUMBER (A-B-C-D) (display 9)



Row 1: Program selected (x = A-B-C-D).

Row 2: Function key definition:

F1 [SET] – Start & irrigation time setting (display 11)
F2 [CAL] – Calendar or frequency of irrigation setting (display 10)
F3 [PRG] – Program number selection (program A-B-C-D)
F4 [EXIT] – Return to main menu (display 6) .

Key F3 [PRG] selects the active program (A, B, C, D)

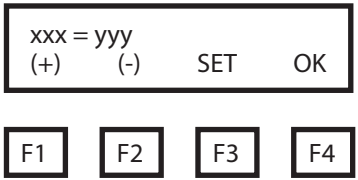
2.2.4 - CALENDAR OR IRRIGATION FREQUENCY SETTING (display 10)

Selecting F2 [CAL] from display 9 advances into weekly calendar setting and/or irrigation frequency times.

Pressing F1 [+] or F2 [-]irrigation frequency or day of week is selected (the selection is shown in the data field XXX).

F3 [SET] enables or disables day or frequency setting (the selection is showed in data field YYY).

Calendar/frequency



Row 1: xxx displays the day of week or irrigation frequency.

yyy displays operating state enabling or disabling (ON/OFF) day or frequency displayed in the field xxx.

Data field xxx
Programmable irrigation frequency:
24h : Irrigation enabled every day (24 hours).
48h : Irrigation enabled every 2 days (48 hours).

72h : Irrigation enabled every 3 days (72 hours).
96h : Irrigation enabled every 4 days (96 hours).

Weekly calendar:
Mon : Enabling on Monday.
Tue : Enabling on Tuesday.
Wed : Enabling on Wednesday.
Thu : Enabling on Thursday
Fri : Enabling on Friday
Sat : Enabling on Saturday
Sun : Enabling on Sunday

Data field yyy
Enabling or disabling:
YES : Irrigation enabled.
NO : Irrigation disabled

Row 2: Function key definition:

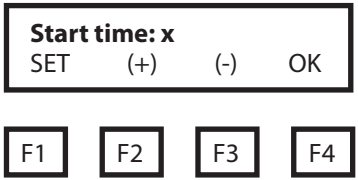
F1 [+] - Increases day or frequency.
F2 [-] - Decreases day or frequency.
F3 [SET] - Enables irrigation on selected day (ON/OFF) .
F4 [OK] - Confirmation and return to programming main page (n.9).

F4 [OK] to confirm selection and return to first page for programming (Display 9) to move to number of starts to be programmed.

NOTE: If a fixed frequency is chosen (e.g. 24 hours), the calendar is automatically excluded (and vice versa).

2.2.5 - SELECTION OF START PROGRAM NUMBER (display 11)

Keys F2 [+] and F3 [-] select the start program number(1-2-3-4)



Row 1: Start number to be programmed (x = 1-2-3-4).

Row 2: Function key definition:

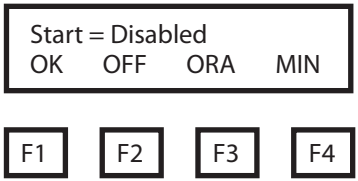
F1 [SET] - Sets selected starting hour (display12) .
F2 [+] - Selects start program number (x = 1-2-3-4) .
F3 [-] - Selects start program number (x = 4-3-2-1) .
F4 [OK] - Confirms selection and advances to time programming for irrigation of the 8 zones (display 13).

F1 [SET] advance to selection of the hour of start programming (display 12)
F4 [OK] advances directly to zone programming (display 13).

2.2.6 - ENABLES START AND PROGRAMMING HOUR START(display 12)

F2 [ON] enables and disables [OFF] the management of the start program or to be programmed.

If the start is disabled [OFF] the following screen is shown:

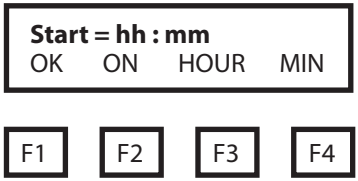


Row 1: Starting state disabled.

Row 2: Function key definition:

F1 [OK] – Confirms the selection and back to previous page (display 11).
F2 [OFF] – Enables start and advances to ON mode.
F3 [HOUR] – No function key when in OFF mode.
F4 [MIN] – No function key when in OFF mode.

F2 [ON] enables start and the hour setting to be activated.



Row 1: Start time in hours (hh) and minutes (mm).

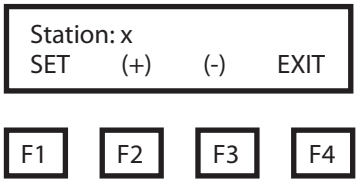
Row 2: Function key definition:

F1 [OK] - Confirms selection and back to start selection (display 11).
F2 [ON] - Disables start and goes into OFF mode.
F3 [HOUR] - Start hour programming.
F4 [MIN] - Minutes programming.

F3 [HOUR] and F4 [MIN] start time setting in hours and minutes.
F1 [OK] to confirm data programmed and return to the page of starts selection (display 11).

2.2.7 - SELECTION OF IRRIGATION ZONE (display 13)

F2 [+] and F3 [-] selects the zone to be programmed (from 1 to 8)



Row 1: Zone number (x = 1,2,3,4,5,6,7,8).

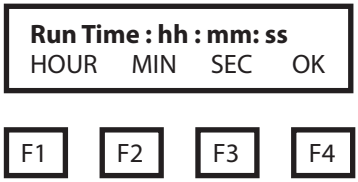
Row 2: Function key definition:

F1 [SET] - Programs time for irrigation (display 14) .
F2 [+] - Selects zone program number.
F3 [-] - Selects zone program number.
F4 [EXIT] - Confirms and returns to page for program number selection (display 9).

F1 [SET] advances to the duration of the irrigation program.
F4 [EXIT] to confirm selection and return to the first page of programming “program number selection” (display 9).

2.2.8 - SETTING THE IRRIGATION TIME (display 14)

F1, F2, F3 sets hours, minutes and seconds from a minimum of 1 second to a maximum of 9 hours (8 hours : 59 minutes : 59 seconds).



Row 1: Irrigation duration in hours, minutes and seconds (hh:mm:ss).

Row 2: Function key definition:

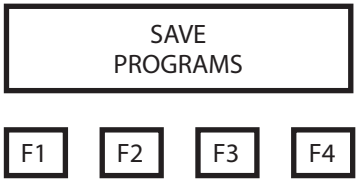
F1 [HOUR]- Sets irrigation duration (hours).
F2 [MIN] - Sets irrigation duration (minutes).
F3 [SEC] - Sets irrigation duration (seconds).
F4 [OK] - Confirms selection and returns to zone selection page.

F4 [OK] confirms selection and returns to previous page (display 13) for the selection of another zone or to abandon irrigation time programming procedure.

From display 13, pressing F4 twice (EXIT – EXIT) set programs are saved and programming procedure is finished.

2.2.9 - SAVING PROGRAMS AND EXITING FROM THE PROGRAMMING SYSTEM (display 15)

On the first page of programming (display 9) select F4 [EXIT] to exit from the programming procedure: before returning to the main menu (display 6) the following message is shown:



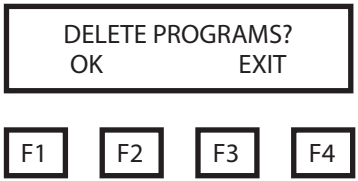
Function key definition:

F1 - No function associated with the key.
F2 - No function associated with the key.
F3 - No function associated with the key.
F4 - No function associated with the key.

On each exit from the programming system all data is saved in the non-volatile controller memory. This prevents programs being lost if the battery is disconnected. Data will be restored when the system is switched on again.

2.3 - PROGRAMS CANCELLATION (display 16)

To delete a program press F3 [PRG] and hold for 5 seconds on the main menu page (display 6 paragraph 2.1.6) until the following message is displayed:



The first row is displayed in a flashing message asking for a cancellation of programs.

Function key definition:

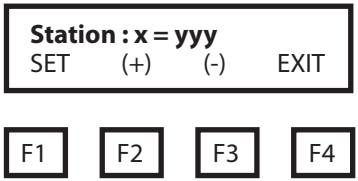
F1 [OK] - Confirmation and cancellation of programs.
F2 - No function associated with key.
F3 - No function associated with key.
F4 [EXIT] - Abandonment of procedure and return to main menu (display 6).

F4 [EXIT] to abandon the deletion process and return to main menu (display 6 paragraph 2.1.6).
F1 [OK] to confirm the cancellation of all programs in memory: “ERASE PROGRAMS” message is displayed.
The programs are cancelled, and after two seconds the display returns to the main programming menu. (Display 6

2.4 - MANUAL OVERRIDE

The manual override allows the operator to drive (open / close) independently each of the eight zones: this allows the possibility to overlap at will the opening or closing of the solenoid valves. To access the management procedure of manual override functions, press F4 [MAN] in the main menu (display 6 paragraph 2.1.6).

2.4.1 - MANAGEMENT OF MANUAL OVERRIDE FUNCTIONS (display 17)



Row 1: Number of zone (x = 1,2,3,4,5,6,7,8) and operative state of valve (yyy = ON or OFF).

Row 2: Function key definition:

F1 [SET] - Opening (ON) or closed (OFF) of selected area.
F2 [+] - Select area to be managed manually (x = 1,2,3,4,5,6,7,8) .
F3 [-] - Select area to be managed manually (x = 1,2,3,4,5,6,7,8) .
F4 [EXIT] - Return to Main Menu programming (Display 6).

F1 [SET] to open (ON) or close (OFF) in manual mode the selected area by pressing F2 [+] and F3 [-].

The number of selected area is indicated in the data field x, while the operating state in the currently selected zone (ON or OFF) is indicated in data field yyy.
F4 [EXIT] to confirm selection and return to main menu page. (Display 6)

Manual opening of zones can be used at any time but it is not accessible if there is an ongoing programmed watering cycle.

If a solenoid valve is manually opened a programmed watering cycle starts (PA, PB, PC or PD), at the end of the run time set in the program, the solenoid valve closes and terminates either the automatic or manual cycle.

3. PROGRAMS

3.1- PROGRAM MANAGEMENT

The programming procedure allows **four start points** to be set as, defined by the time clock system, for each of the **four programs** covered (PA, PB, PC, PD).

For each start is also possible to adjust the **irrigation time of the eight zones** which are activated sequentially from first to last: To bypass a zone program set the run time to zero.

The watering cycles can be defined for each program, by frequency mode or by programming the weekly calendar.

PROGRAMS	IRRIGATION MODE FOR EACH PROGRAM	START TIMES PROGRAMMABLE FOR EACH PROGRAM	IRRIGATION TIMES PROGRAMMABLE FOR EACH START	NOTES
PROGRAM **“A”**	FREQUENCY (24h,48h,72h,96h) or WEEKLY CALENDAR	STARTING TIME N. 1 STARTING TIME N. 2 STARTING TIME N. 3 STARTING TIME N. 4	IRRIGATION TIME ZONE 1 IRRIGATION TIME ZONE 2 IRRIGATION TIME ZONE 3 IRRIGATION TIME ZONE 4 IRRIGATION TIME ZONE 5 IRRIGATION TIME ZONE 6 IRRIGATION TIME ZONE 7 IRRIGATION TIME ZONE 8	
PROGRAM **“B”**	FREQUENCY (24h,48h,72h,96h) or WEEKLY CALENDAR	STARTING TIME N. 1 STARTING TIME N. 2 STARTING TIME N. 3 STARTING TIME N. 4	IRRIGATION TIME ZONE 1 IRRIGATION TIME ZONE 2 IRRIGATION TIME ZONE 3 IRRIGATION TIME ZONE 4 IRRIGATION TIME ZONE 5 IRRIGATION TIME ZONE 6 IRRIGATION TIME ZONE 7 IRRIGATION TIME ZONE 8	

PROGRAMS	IRRIGATION MODE FOR EACH PROGRAM	START TIMES PROGRAMMABLE FOR EACH PROGRAM	IRRIGATION TIMES PROGRAMMABLE FOR EACH START	NOTES
PROGRAM **"C"**	FREQUENCY (24h,48h,72h,96h) or WEEKLY CALENDAR	STARTING TIME N. 1 STARTING TIME N. 2 STARTING TIME N. 3 STARTING TIME N. 4	IRRIGATION TIME ZONE 1 IRRIGATION TIME ZONE 2 IRRIGATION TIME ZONE 3 IRRIGATION TIME ZONE 4 IRRIGATION TIME ZONE 5 IRRIGATION TIME ZONE 6 IRRIGATION TIME ZONE 7 IRRIGATION TIME ZONE 8	
PROGRAM **"D"**	FREQUENCY (24h,48h,72h,96h) or WEEKLY CALENDAR	STARTING TIME N. 1 STARTING TIME N. 2 STARTING TIME N. 3 STARTING TIME N. 4	IRRIGATION TIME ZONE 1 IRRIGATION TIME ZONE 2 IRRIGATION TIME ZONE 3 IRRIGATION TIME ZONE 4 IRRIGATION TIME ZONE 5 IRRIGATION TIME ZONE 6 IRRIGATION TIME ZONE 7 IRRIGATION TIME ZONE 8	

PROGRAM TRACKING FORM

To be completed and kept in order to trace the setting stored in the controller.

PROGRAM NAME	IRRIGATION START TIME	ZONE	IRRIGATION DURATION	DAYS ENABLED or FREQUENCY
		1		
		2		
		3		
		4		
		5		
		6		
		7		
		8		

PROGRAM NAME	IRRIGATION START TIME	ZONE	IRRIGATION DURATION	DAYS ENABLED or FREQUENCY
		1		
		2		
		3		
		4		
		5		
		6		
		7		
		8		

PROGRAM NAME	IRRIGATION START TIME	ZONE	IRRIGATION DURATION	DAYS ENABLED or FREQUENCY
		1		
		2		
		3		
		4		
		5		
		6		
		7		
		8		

PROGRAM NAME	IRRIGATION START TIME	ZONE	IRRIGATION DURATION	DAYS ENABLED or FREQUENCY
		1		
		2		
		3		
		4		
		5		
		6		
		7		
		8		

PROGRAM NAME	IRRIGATION START TIME	ZONE	IRRIGATION DURATION	DAYS ENABLED or FREQUENCY
		1		
		2		
		3		
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		5		
		6		
		7		
		8		

PROGRAM NAME	IRRIGATION START TIME	ZONE	IRRIGATION DURATION	DAYS ENABLED or FREQUENCY
		1		
		2		
		3		
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		5		
		6		
		7		
		8		

PROGRAM NAME	IRRIGATION START TIME	ZONE	IRRIGATION DURATION	DAYS ENABLED or FREQUENCY
		1		
		2		
		3		
		4		
		5		
		6		
		7		
		8		

IRRIGATION CONTROLLER 8 ZONE TYPE:
"CHRONO"
Rev. 1

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Do not dispose with normal household waste